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THE JAPANESE SEA URCHIN MARKET

Sunee C. Sonu

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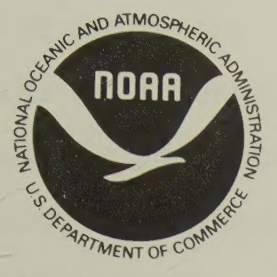

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Sunee C. Sonu

Southwest Region
National Marine Fisheries Service, NOAA
Long Beach, California 90802

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National Oceanic and Atmospheric Administration
D. James Baker, Under Secretary for Oceans and Atmospheric
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EXECUTIVE SUMMARY

Japan is by far the world's largest importer and consumer of sea urchin roe. In 1994, Japan imported about 6,130 metric tons (mt) of sea urchins and sea urchin roe valued at 251 million dollars, an increase of three-fold in volume and 25-fold in value from 1975. Much of this increase was due to decreased domestic harvest and consequent rise in price for sea urchin roe.

The United States has become the largest supplier of sea urchins and sea urchin roe to Japan. In 1994, Japan's imports of sea urchins and sea urchin roe from the United States were valued at 155 million dollars. Good demand, declining Japanese harvests, and the strong yen contributed to the increased U.S. exports. The different peak fishing seasons in Japan (spring through summer) and the United States (fall through spring) have also benefited U.S. exporters in marketing sea urchins to Japan.

Japan was the world's largest harvester of sea urchins until 1984. Since 1987, Japanese harvests declined steadily mainly due to declining stock abundance. The 1993 landings of 13,713 mt were the lowest landings in 35 years and was less than half of the record high landings which occurred in 1969. From 1987 to 1992, landings in the United States have exceeded Japanese landings.

Most fresh sea urchin roe are sold through auction at the Tokyo Central Wholesale Market. Although good quality of roe is the most important factor for high prices, the prices are also significantly influenced by volume of total supply (domestic and imported roe). In 1994, high prices for imported roe occurred in February and May. The highest price for Japanese roe occurred in January. These high prices reflect the low availability of both Japanese and imported roe during these months.

The tariff for sea urchin roe is higher than rates for most other seafood products imported into Japan. The tariff for U.S. exports of sea urchin roe is also higher than the rate imposed on other major suppliers (Chile, Korea, China). Since the United States is the largest exporter of sea urchins and sea urchin roe to Japan, a reduction of the tariff could be beneficial to U.S. exporters.

The future market of U.S. sea urchins in Japan depends to a large extent on Japanese sea urchin harvests. Because sea urchin stocks appear to be declining, and domestic harvest is not likely to increase in the short term, increased export of U.S. sea urchins and sea urchin roe has significant potential.

INTRODUCTION

Japan has been the world's largest harvester, consumer, and importer of sea urchins. Recently, however, the Japanese harvest of sea urchins has declined significantly, and Japan has become increasingly more dependent on imports. This need is likely to remain because domestic harvest is not likely to increase in the short term (Hokkai Suisan Shinbun Sha 1993).

The Unites States has been the world's largest harvesting nation of sea urchins since 1988 and was the largest supplier of sea urchins and sea urchin roe to Japan in 1994. Japan has the most important potential for U.S. sea urchins and sea urchin roe.

This report provides a detailed examination of the Japanese sea urchin fishery and market, to identify potential opportunities for export of U.S. products and to identify strategies which may help increase such efforts.

WORLD SEA URCHIN FISHERY

From 1975 to 1992, total world landings of sea urchins increased by 169 percent, from 31,000 metric tons (mt) to 83,000 mt (Table 1). Since 1986, five countries have had annual landings of more than 2,000 mt of sea urchins. In 1992, these countries were, in order of landing volume, the United States (36 percent), Chile (35 percent), Japan (17 percent), Russia (7 percent), and the Republic of Korea (3 percent).

The global increase in sea urchin landings during recent years was due mainly to increased harvests by the United States and Chile. Combined sea urchin landings by these two countries rose from 23,000 mt in 1984 to 59,000 mt in 1992. The largest factor contributing to the increase has been the increased demand in Japan due to poor domestic harvest of sea urchins. Japan was the world largest sea urchin harvesting nation until 1984.

Strongylocentrotus spp. and *Loxechinus albus* are the most abundant sea urchins landed (Table 2). Between 1985 and 1992 *Strongylocentrotus spp.* accounted for 46 to 72 percent of total landings of sea urchin species, and *Loxechinus albus*, 21 to 44 percent. Landings of other species were small, only 5 to 11 percent.

The majority of world landings of sea urchins from 1985 through 1992 occurred in the Pacific Ocean (85 to 99 percent), followed by the Atlantic Ocean (1 to 15 percent; Table 3 and Figure 1). Although the Atlantic Ocean has not been a major sea urchin producing region, considerable growth in regional landings has occurred in the past few years. Landings in this region (FAO areas 21, 27, and 31) increased from 127 mt in 1985 to 12,072 mt in 1992.

Table 1. World sea urchin landings by country, 1975-1992 (metric tons).

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983
U.S.A.	3,452	3,926	6,594	8,409	7,522	42	125	7,939	7,304
Chile	2,106	9,809	8,517	6,499	13,206	13,649	15,502	12,159	11,826
Japan	22,482	23,085	26,898	25,930	26,500	24,158	23,984	25,975	25,254
Russia, Fed.	---*	---	---	---	---	---	---	---	---
U.S.S.R.	---	---	---	---	---	---	---	---	832
Korea, Rep.	2,321	3,497	4,119	2,969	2,720	3,383	5,212	5,566	5,413
New Zealand	---	---	---	---	125	152	77	138	280
France	417	335	233	318	312	373	377	423	185
Korea, D.P. Rp.	---	---	---	---	---	---	---	---	---
Ireland	---	---	---	---	132	108	102	97	48
China	---	---	---	---	---	---	---	---	---
Philippines	---	---	---	---	---	---	---	---	48
Martinique	---	---	---	---	---	---	---	---	---
Cook Islands	---	---	---	---	20	20	20	20	24
Peru	---	---	---	---	---	---	---	---	---
Fiji	---	---	---	---	0**	0	1	2	2
Grenada	---	---	---	---	---	---	---	---	0
Ecuador	---	---	---	---	---	---	---	---	0
Portugal	---	---	---	---	---	---	---	---	0
Others	76	88	42	87	50	87	35	36	50
Total	30,854	40,740	46,403	44,212	50,587	41,972	45,435	52,355	51,266

Table 1 (continued). World sea urchin landings by country, 1975-1992 (metric tons).

Country	1984	1985	1986	1987	1988	1989	1990	1991	1992
U.S.A.	6,901	8,941	14,749	23,526	30,589	29,504	28,726	32,722	29,848
Chile	16,154	30,577	25,408	24,574	22,953	25,527	15,648	21,382	29,198
Japan	23,962	22,745	23,072	22,760	21,812	20,414	19,398	14,136	13,889
Russia, Fed.	---	---	---	---	---	---	---	5,777	5,912
U.S.S.R.	436	514	6,328	6,030	4,735	4,770	6,065	---	---
Korea, Rep.	4,934	6,222	7,785	5,278	4,291	3,633	4,325	3,749	2,476
New Zealand	325	286	295	314	413	797	583	322	869
France	209	404	265	213	248	296	312	201	390
Korea, D.P. Rp.	---	---	239	252	2	100	100	100	100
Ireland	113	77	49	52	64	62	95	104	89
China	---	---	225	194	30	30	30	30	50
Philippines	108	38	62	29	26	52	48	62	40
Martinique	---	---	---	22	22	24	25	50	40
Cook Islands	25	26	27	28	28	29	30	28	25
Peru	---	---	---	---	---	---	---	19	25
Fiji	4	27	30	8	10	9	12	11	14
Greneda	---	---	---	---	---	---	---	5	1
Ecuador	0	0	0	0	0	0	0	1	1
Portugal	0	0	0	0	0	0	1	0	0
Others	48	50	16	4	12	37	134	123	69
Total	53,219	69,907	78,550	83,284	85,235	85,284	75,532	78,822	83,036

* --- - not available
** 0 - more than zero but less than 0.5 metric tons

Sources: FAO 1979, 1984, 1994.

Table 2. World sea urchin landings by major species, 1985-1992 (metric tons).

Species	1985	1986	1987	1988	1989	1990	1991	1992
Strongylocentrotus lividus	50	13	25	59	59	59	0	0
Strongylocentrotus spp.	32,291	44,735	52,853	57,266	54,969	54,568	53,045	49,990
Paracentrotus lividus	404	265	188	189	237	253	201	390
Echinus esculentus	77	49	52	64	62	95	104	89
Loxechinus albus	30,577	25,408	24,574	22,953	25,527	15,648	21,382	29,197
Others	6,508	8,080	5,592	4,704	4,430	4,909	4,090	3,370
Total	69,907	78,550	83,284	85,235	85,284	75,532	78,822	83,036

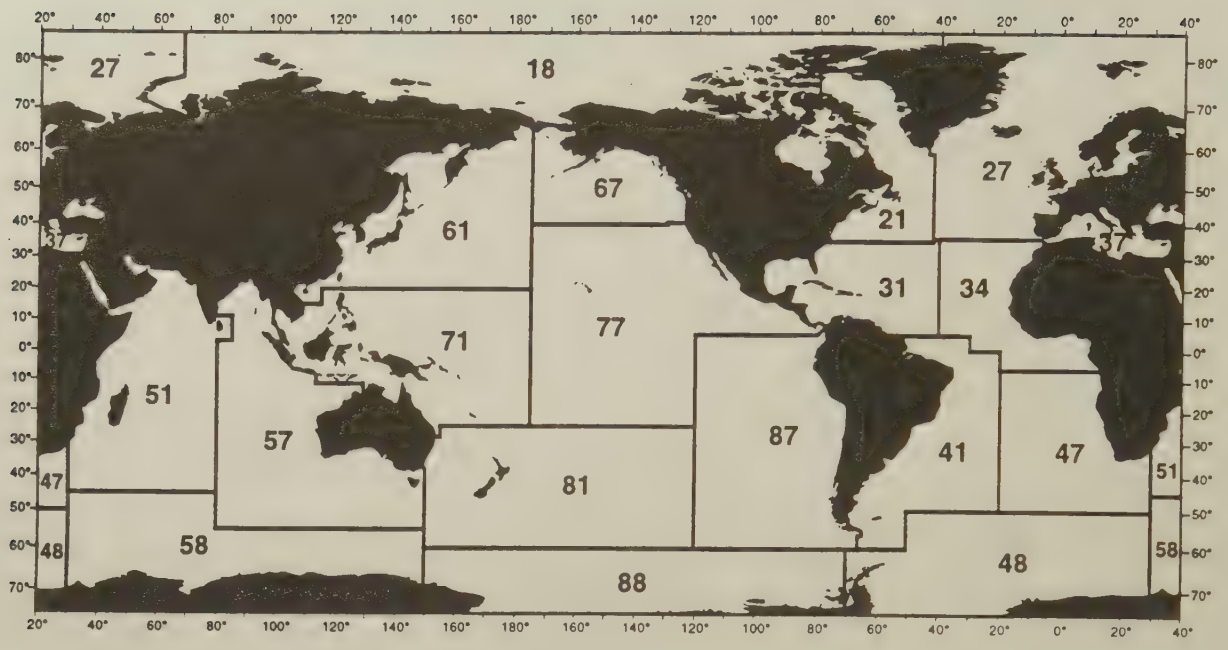
Source: FAO 1994.

Table 3. Distribution of world's sea urchin landings by FAO fishing area, 1985-1992 (metric tons).

Area*	1985	1986	1987	1988	1989	1990	1991	1992
87	30,577	25,408	24,574	22,953	25,527	15,648	21,402	29,223
61	29,481	37,652	34,518	30,882	28,984	30,052	23,915	22,497
77	8,615	13,549	17,950	19,208	15,073	15,177	15,575	12,247
21	-**	5	653	2,822	4,326	6,027	9,336	12,039
67	352	1,222	4,951	8,587	10,134	7,552	7,839	5,587
81	286	295	314	413	797	583	322	869
37	404	265	188	189	237	253	201	390
27	127	62	77	123	121	155	104	89
71	65	92	37	36	61	60	73	54
31	---***	---	22	22	24	25	55	41
Total	69,907	78,550	83,284	85,235	85,284	75,532	78,822	83,036

* - Numbers refer to FAO fishing areas (see Figure 1)
** - - Zero
*** --- - Data not available

Source: FAO 1994.



Note: Numbers refer to FAO fishing areas.

Figure 1. Major FAO fishing areas.

JAPAN'S SEA URCHIN FISHERY

Japan was the world's major harvester of sea urchins, but its share of the world catch has decreased sharply, from 73 percent in 1975 to 17 percent in 1992. The peak year of Japanese sea urchin harvest was 1969 when 27,528 mt of sea urchins were harvested (Figure 2 and Appendix 1). From 1970 through 1986, annual Japanese landings fluctuated between 22,000 and 27,000 mt. Since 1987, Japanese harvest steadily declined due largely to declining stock abundance (Hokkai Suisan Shinbun Sha 1993). The 1993 landings of 13,713 mt were the lowest in 35 years and was less than half of the record landings.

The majority of Japan's harvest of sea urchins, from 1984 through 1993, occurred in the Hokkaido region (38 to 50 percent), followed by the East China Sea region (17 to 28 percent), and North Pacific Ocean region (16 to 25 percent; Table 4 and Figure 3). Between 84 and 90 percent of sea urchin landings occurred in these three regions. The landings in these three regions decreased by 43 percent from 20,665 mt in 1984 to 11,834 mt in 1993. The landings in Hokkaido Island region decreased by 48 percent during the same period. In 1993, about 75 percent of sea urchin landings occurred in Hokkaido Island and four prefectures (Table 5). Peak fishing seasons in these areas are mainly from Spring through Summer.

Six major species of sea urchins are commercially harvested in Japan (Hokkai Suisan Shinbun Sha 1993). The two major species found in northern Japanese waters are *Strongylocentrotus intermedius* and *S. nudus*. These two species represent about 80 percent of the total Japanese harvest of sea urchins (Hokkai Suisan Shinbun Sha 1993). The four major species found in southern Japanese waters are *Strongylocentrotus pulcherrimus*, *Anthocidaris crassispina*, *Pseudocentrotus depressus*, and *Tripneustes gratilla*.

Sea urchin resources in Japan are managed through limits on minimum size, harvest area, and season. The regulations are developed by local fishery cooperatives as well as local governments (Hokkai Suisan Shinbun Sha 1993). Management plans by the fishery cooperatives stress economic returns and hence are usually stricter than those by local governments. For example, in 1991, over 38 percent of fishery cooperatives in Hokkaido set higher minimum size limits for *S. intermedius* than the limit set by the Hokkaido government (Table 6). The ongoing resource enhancement efforts relying on mariculture have yet to show visible results in increased landings.

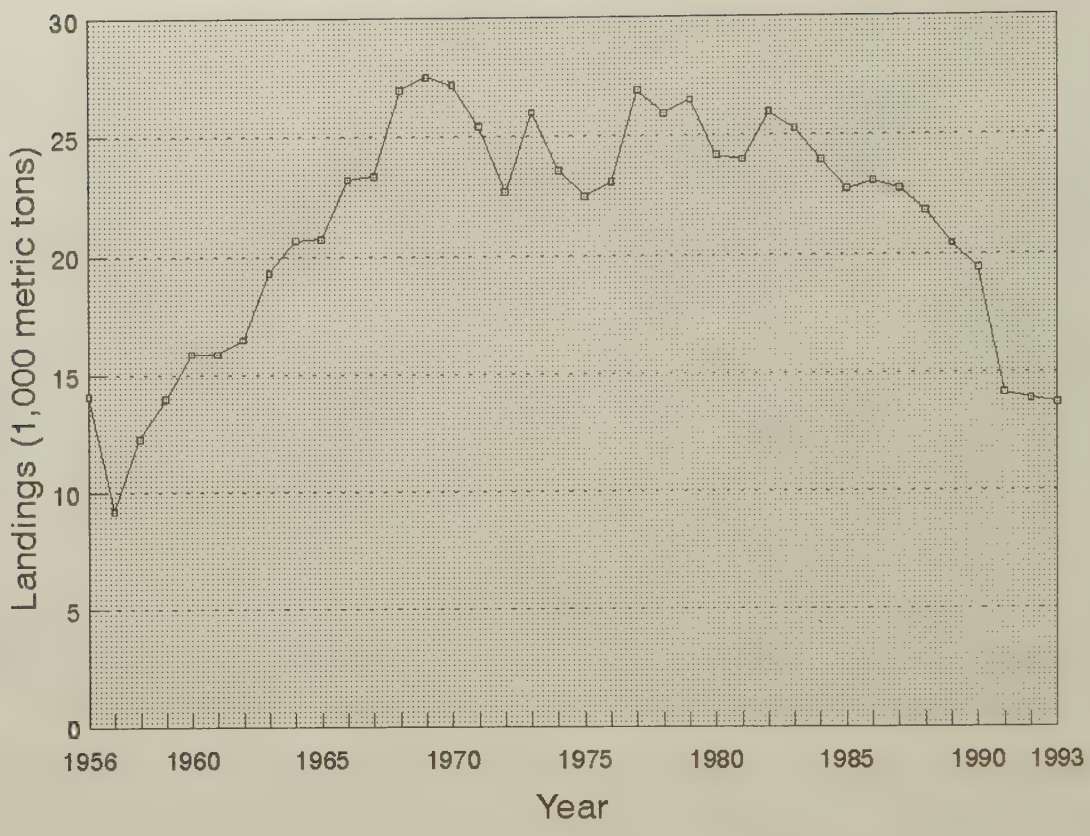


Figure 2. Japan's sea urchin landings, 1956-1993.

Sources: Ministry of Agriculture, Forestry, and Fisheries 1967-1995.

Table 4. Japan's sea urchin landings by fishing area, 1984-1993 (metric tons).

Area	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Hokkaido	10,017	10,094	10,655	10,753	10,955	9,430	7,760	5,493	5,594	5,163
Pacific Ocean:										
North	3,875	4,905	4,600	5,176	4,234	4,175	4,941	3,396	3,120	3,216
Central	18	19	18	21	18	8	16	14	17	31
South	941	928	1,092	937	1,318	1,193	1,098	997	1,013	676
Sea of Japan:										
North	106	148	223	225	245	298	210	132	154	138
West	1,447	985	879	679	687	806	689	503	576	669
East China Sea	6,773	5,085	5,029	4,450	3,755	4,032	4,039	3,138	3,074	3,455
Seto Inland Sea	785	581	576	519	580	472	665	464	343	365
Total	23,962	22,745	23,076	22,760	21,812	20,414	19,398	14,136	13,889	13,713

Source: Ministry of Agriculture, Forestry and Fisheries 1986-1995.

Figure 3. Japan's fishing regions.
Source: Ministry of Agriculture, Forestry, and Fisheries 1995.

Table 5. Peak Japanese fishing seasons for major sea urchin species in Hokkaido and major sea urchin fishing prefectures for 1993.

Area	Landings (metric tons)	(%)	Major Species	Peak fishing seasons
Hokkaido	5,163	38	*Strongylocentrotus intermedius*	April-August
			S. nudus	June-September
Prefectures:				
Nagasaki	1,922	14	*Anthocidaris crassispina*	March-May
Iwate	1,297	9	*S. intermedius*	April-August
			S. nudus	April-August
Aomori	1,025	7	*S. intermedius*	April-August
			S. nudus	April-August
Miyagi	835	6	*S. nudus*	April-August
Others	3,471	25		
Total	13,713	100		

Sources: Ministry of Agriculture, Forestry and Fisheries 1995.
Hokkai Suisan Shinbun Sha 1993.

Table 6. Minimum size limits by percent for *strongylocentrotus intermedius*, enforced by Hokkaido Fishery Cooperatives (HFC's).

Minimum size (cm)	Percent of HFC's 1985	1991
4.0*	63.0	61.5
4.5	10.2	10.1
5.0	21.3	23.9
5.5	0.9	0.9
6.0	4.6	1.8
over 6.0	0	1.8

* - Minimum legal size set by Hokkaido government
Source: Hokkai Suisan Shinbun Sha 1993.

JAPAN'S IMPORTS

Japan is the world's largest importer of sea urchins and sea urchin roe. In 1994, the Japanese imports of fresh, frozen, and prepared sea urchins and sea urchin roe were 6,130 mt valued at about 251 million dollars (Tables 7-13). From 1975 to 1994, imports of sea urchins and sea urchin roe increased more than three times in volume and 25 times in value (Tables 7-13 and Japan Marine Products Importers Association 1976). The number of countries supplying sea urchins and sea urchin roe to Japan also increased from 6 in 1975 to 19 in 1994. Good demand, declining Japan's harvests, and the strong yen contributed to increased imports.

Live or fresh sea urchin and sea urchin roe dominated and represented as much as 76 percent in volume and 90 percent in value. Frozen sea urchin roe accounted for 12 percent in volume and four percent in value, followed by dried or salted sea urchin roe which accounted for 13 percent in volume and six percent in value.

The United States has become the leading supplier of live or fresh products to Japan in recent years, passing the Republic of Korea which had been the leader (Tables 7 and 8). Imports of live or fresh product forms from the Republic of Korea are usually high during the summer, while imports from the United States are usually high fall through spring (Table 9). Chile is the major supplier of frozen roe (Tables 10 and 11). The Democratic People's Republic of Korea and the Republic of Korea have been the dominant suppliers of salted products to Japan (Tables 12 and 13). These two nations supplied Japan with as much as 74 percent in volume and 90 percent in value of salted products in 1994.

Tariffs

Imports of sea urchin products into Japan are subject to tariffs (Table 14). As Japan and the United States are signatories to the World Trade Organization (WTO), WTO tariffs apply to U.S. exports of sea urchin products: 9.4 percent for fresh, chilled, frozen, dried, salted, or in brine products, and 12 percent for prepared or preserved products (including products in airtight containers). Tariff for live sea urchins is free. Preferential tariffs apply to imports of sea urchin products from the Republic of Korea, China, and Chile (Hokkai Suisan Shinbun Sha 1993). Tariff rates are calculated as a percentage of cost, insurance, and freight (CIF) value.

Table 7. Japan's imports of live or fresh sea urchin and sea urchin roe by volume, 1975-1994 (metric tons).

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
U.S.A.	232	357	511	486	759	590	637	497	411	539
Korea, Rep.	966	985	1,137	1,038	743	807	977	1,100	1,236	1,219
Canada	--*	--	--	0**	20	27	15	24	69	132
Chile	9	85	305	248	370	89	238	59	85	155
China	5	12	15	57	35	87	135	147	175	158
Iceland	--	--	--	--	--	--	--	--	--	--
Hong Kong	2	11	10	17	9	15	7	12	10	15
Peru	--	--	--	--	22	16	21	14	2	--
Australia	--	--	0	7	4	0	--	--	--	--
Philippines	3	41	170	111	19	2	3	14	25	23
Indonesia	--	--	--	--	--	--	--	--	0	1
Denmark	--	--	--	--	--	--	--	--	--	--
Russia, Fed.	--	--	--	--	--	--	--	--	--	--
New Zealand	--	--	--	--	--	--	--	--	--	--
Norway	--	--	--	1	0	--	--	--	--	--
Taiwan	47	35	28	110	51	66	53	118	60	37
Korea, D.P. Rp.	358	266	245	193	443	492	322	407	243	322
Malaysia	--	--	--	--	--	--	--	--	--	0
U.S.S.R.	3	--	--	2	0	2	1	0	1	2
Mexico	54	82	36	45	26	14	15	6	4	32
Spain	--	--	--	--	--	--	--	--	--	--
Guyana	--	--	--	--	--	--	--	--	--	--
Singapore	--	--	--	--	--	--	--	--	--	--
Switzerland	--	--	--	--	--	--	--	--	--	--
Total***	1,684	1,874	2,458	2,315	2,502	2,207	2,426	2,397	2,321	2,636

Table 7 (continued). Japan's imports of live or fresh sea urchin and sea urchin roe by by volume, 1975-1994 (metric tons).

Country	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
U.S.A.	888	1,243	1,564	1,305	1,855	1,745	2,046	2,032	2,587	3,129
Korea, Rep.	1,091	1,158	1,110	848	692	616	513	529	541	440
Canada	148	176	190	406	440	351	397	555	367	387
Chile	182	263	122	17	5	11	44	47	147	285
China	145	225	194	2	7	19	60	129	223	259
Iceland	--	--	--	--	--	--	--	1	44	83
Hong Kong	26	57	44	47	46	44	42	44	35	38
Peru	--	--	--	1	1	1	--	--	--	3
Australia	--	3	14	7	4	7	6	5	3	3
Philippines	37	79	65	--	--	0	--	1	1	1
Indonesia	8	--	--	--	--	--	--	0	--	1
Denmark	--	--	--	--	--	--	--	--	--	0
Russia, Fed.	--	--	--	--	--	--	--	10	3	0
New Zealand	0	--	--	2	2	2	--	1	2	0
Norway	--	--	--	--	--	--	1	0	--	0
Taiwan	55	61	18	--	--	--	0	--	1	0
Korea, D.P. Rp.	258	239	252	4	7	12	17	1	--	--
Malaysia	0	--	--	--	--	--	--	--	--	--
U.S.S.R.	0	--	--	--	--	--	--	--	--	--
Mexico	19	98	125	4	80	73	25	13	1	--
Turkey	0	--	--	--	--	--	--	--	--	--
Spain	--	--	--	--	1	--	--	--	--	--
Guyana	--	--	--	--	0	--	--	--	--	--
Singapore	--	--	--	--	--	0	--	--	--	--
Switzerland	--	--	--	--	--	--	--	--	0	--
Total	2,857	3,600	3,696	2,643	3,140	2,882	3,151	3,367	3,954	4,630

* -- - zero imports
** 0 - more than zero but less than 0.5 metric tons
*** Total - may not add due to rounding
Source: Japan Marine Products Importers Association 1976-1995.

Table 8. Japan's imports of live or fresh sea urchin and sea urchin roe by value, 1975-1994 (U.S. $1,000).

Country	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
U.S.A.	2,528	4,049	5,936	6,276	11,131	9,992	12,088	9,426	8,671	10,516
Korea, Rep.	5,907	7,825	10,442	12,878	13,098	13,080	16,321	17,951	20,890	25,427
Canada	31	--*	--	4	262	403	274	442	1,198	2,238
China	13	36	66	292	215	630	783	827	983	853
Chile	45	382	1,397	1,279	2,123	674	2,115	293	450	921
Iceland	--	--	--	--	--	--	--	--	--	--
Hong Kong	28	135	187	329	222	358	269	338	272	348
Australia	--	--	3	86	48	1	--	--	--	--
Peru	--	--	--	--	146	110	175	95	11	--
Philippines	8	71	322	254	71	5	12	61	107	93
Indonesia	--	--	--	--	--	--	--	--	2	3
New Zealand	--	--	--	--	--	--	--	--	--	--
Norway	--	--	--	18	9	--	--	--	--	--
Taiwan	178	118	128	493	220	297	265	636	309	214
Russia, Fed.	--	--	--	--	--	--	--	--	--	--
Korea, D.P. Rp.	998	1,007	1,641	1,435	2,607	2,609	1,593	2,135	1,414	2,086
Malaysia	--	--	--	--	--	--	--	--	--	7
U.S.S.R.	25	--	--	19	4	38	23	9	17	42
Mexico	493	781	375	573	340	191	225	56	44	376
Spain	--	--	--	--	--	--	--	--	--	--
Guyana	--	--	--	--	--	--	--	--	--	--
Singapore	--	--	--	--	--	--	--	--	--	--
Switzerland	--	--	--	--	--	--	--	--	--	--
Total**	10,253	14,404	20,496	23,935	30,495	28,390	34,105	32,268	34,418	43,127

Table 8 (continued). Japan's imports of live or fresh sea urchin and sea urchin roe by value, 1975-1994 (US $1,000).

Country	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
U.S.A.	15,917	26,529	40,208	46,697	61,361	66,972	92,135	91,658	119,832	153,297
Korea, Rep.	22,352	35,447	45,279	47,575	35,428	31,883	30,036	32,284	34,173	30,146
Canada	2,337	3,501	4,195	9,841	11,013	8,820	12,932	20,371	14,174	17,085
China	838	1,883	1,995	29	183	744	2,594	5,099	9,945	10,819
Chile	1,119	1,704	933	229	110	240	987	1,210	3,093	6,888
Iceland	--*	--	--	--	--	--	--	39	1,763	3,404
Hong Kong	418	793	36	1,690	1,596	1,855	2,450	2,795	2,271	2,676
Australia	--	95	364	228	122	321	422	469	252	268
Peru	--	--	--	7	9	8	--	--	--	72
Philippines	134	345	1,108	--	12	--	--	14	13	24
Indonesia	8	--	--	--	--	--	--	7	--	17
New Zealand	2	--	--	30	53	30	--	34	50	7
Norway	--	--	--	--	--	--	23	9	--	6
Taiwan	347	424	129	--	--	--	20	--	--	6
Russia, Fed.	--	--	--	--	--	--	--	294	144	3
Korea, D.P. Rp.	1,809	1,997	2,368	14	132	160	91	43	--	--
Malaysia	2	--	--	--	--	--	--	--	--	--
U.S.S.R.	2	--	--	--	--	--	--	--	--	--
Mexico	160	1,532	2,275	110	2,405	2,331	878	901	51	--
Spain	--	--	--	--	72	--	--	--	--	--
Guyana	--	--	--	--	5	--	--	--	--	--
Singapore	--	--	--	--	--	4	--	--	--	--
Switzerland	--	--	--	--	--	--	--	--	18	--
Total	45,448	74,252	99,284	106,450	112,488	113,380	142,566	155,229	185,814	224,729

* -- - zero imports
** Total - may not add due to rounding

Source: Japan Marine Products Importers Association 1976-1995.

Table 9. Japan's monthly imports of live or fresh sea urchin and sea urchin roe by volume, January-December 1994 (metric tons).

Country	Jan.	Feb.	March	April	May	June
U.S.A.	259.3	254.7	272.4	226.7	147.3	112.4
Korea, Rep.	28.3	17.1	22.9	36.6	50.6	69.0
Canada	49.1	35.4	48.3	37.7	32.8	9.6
Chile	1.2	13.3	23.4	27.1	26.9	32.6
China	8.5	5.6	32.6	58.0	22.3	33.1
Iceland	8.8	8.6	13.0	8.7	2.8	0.8
Hong Kong	4.1	1.6	8.7	16.5	4.4	0.3
Peru	--*	--	--	--	--	--
Australia	0.1	0.1	--	--	0**	0.3
Philippines	--	--	--	--	--	--
Indonesia	--	--	0.5	--	--	--
Denmark	--	0.4	--	--	--	--
Russia, Fed.	--	--	--	--	--	--
New Zealand	--	--	--	--	--	--
Norway	--	--	--	0.1	--	--
Taiwan	--	--	0.1	--	--	--
Total***	359.5	336.8	421.9	411.4	287.0	258.1

Table 9 (continued). Japan's monthly imports of live or fresh sea urchin and sea urchin roe by volume, January-December 1994 (metric tons).

Country	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual totals
U.S.A.	140.2	244.7	334.4	407.2	323.8	404.8	3,129.4
Korea, Rep.	58.0	37.8	22.3	26.4	32.2	38.9	439.9
Canada	11.7	7.5	14.2	25.1	29.4	86.6	387.4
Chile	31.2	35.3	27.4	30.2	5.6	30.4	284.6
China	47.8	17.2	16.6	9.0	2.8	6.2	259.5
Iceland	0.9	3.2	10.1	7.6	10.0	8.8	83.4
Hong Kong	0.9	0	--	0.3	0.1	0.6	37.7
Peru	--	--	--	--	0.9	2.3	3.1
Australia	0	0.2	0.3	0.4	0.5	0.8	2.9
Philippines	0.1	0	0.2	0.2	--	--	0.7
Indonesia	--	--	--	--	--	--	0.5
Denmark	--	--	--	--	--	--	0.4
Russia, Fed.	--	0.2	--	--	--	--	0.2
New Zealand	--	0.1	0.3	--	--	--	0.4
Norway	--	--	--	--	--	--	0.1
Taiwan	--	--	--	--	--	--	0.1
Total	291.0	346.7	425.6	506.5	405.2	579.4	4,630.2

* -- - zero imports
** 0 - more than zero but less than 0.05 metric tons
*** Total - may not add due to rounding

Source: Japan Marine Products Importers Association 1994-1995.

Table 10. Japan's imports of frozen sea urchin roe by volume, 1988-1994 (metric tons).

Country	1988	1989	1990	1991	1992	1993	1994
Chile	179	83	41	143	242	465	429
Canada	37	47	66	158	227	137	147
U.S.A.	432	446	341	344	254	229	98
Korea, D.P. Rp.	2	3	19	85	70	27	18
Peru	--*	--	--	--	1	--	10
Mexico	71	84	142	40	23	28	6
Iceland	--	--	--	--	0**	--	3
China	30	51	37	58	51	33	2
New Zealand	--	1	1	--	1	2	2
Pilippines	2	0	0	1	0	2	0
Korea, Rep.	0	0	--	2	2	5	--
Taiwan	6	--	--	--	--	--	--
Portugal	--	0	--	--	--	--	--
Australia	--	0	0	1	2	--	--
Hong Kong	--	1	--	--	--	--	--
Vietnam	--	--	--	--	0	21	--
U.S.S.R.	--	--	6	--	--	--	--
Russia, Fed.	--	--	--	--	2	1	--
Total***	760	716	653	832	876	948	716

* -- - zero imports
** 0 - more than zero but less than 0.5 metric tons
*** Total - may not add due to rounding

Source: Japan Marine Products Importers Association 1989-1995.

Table 11. Japan's imports of frozen sea urchin roe by value, 1988-1994 (U.S. $1,000).

Country	1988	1989	1990	1991	1992	1993	1994
Chile	1,453	762	290	1,955	3,676	8,731	7,336
U.S.A.	6,836	5,942	4,163	5,743	3,136	3,977	1,456
Canada	434	372	744	1,839	1,836	1,070	1,201
Korea, D.P. Rp.	17	61	138	751	663	408	299
Mexico	1,513	1,495	2,682	1,024	742	584	195
Peru	--	--	--	--	16	--	181
China	469	601	559	768	739	485	47
New Zealand	--	16	16	--	26	57	41
Iceland	--	--	--	--	5	--	19
Philippines	15	4	5	25	2	34	5
Korea, Rep.	6	2	--	76	112	76	--
Taiwan	124	--	--	--	--	--	--
Portugal	--	6	--	--	--	--	--
Australia	--	10	5	8	68	--	--
Hong Kong	--	20	--	--	--	--	--
Vietnam	--	--	--	--	2	175	--
U.S.S.R.	--	--	111	--	--	--	--
Russia, Fed.	--	--	--	--	4	9	--
Total**	10,867	9,291	8,713	12,190	11,033	15,564	10,780

* -- - zero imports
** Total - may not add due to rounding

Source: Japan Marine Products Importers Association 1989-1995.

Table 12. Japan's imports of dried or salted sea urchin roe by volume, 1988-1994 (metric tons).

Country	1988	1989	1990	1991	1992	1993	1994
Korea, D.P. Rp.	430	378	574	198	205	228	298
Korea, Rep.	444	316	252	260	300	254	286
China	210	147	135	148	113	127	93
Philippines	56	60	72	50	62	61	37
Chile	27	--*	--	19	28	50	34
U.S.A.	13	16	2	1	--	25	17
Vietnam	--	--	--	--	--	22	11
Taiwan	27	30	28	24	28	18	3
Iceland	--	--	--	--	--	--	2
Russia, Fed.	--	--	--	--	0**	1	1
Canada	10	9	--	--	--	1	1
Hong Kong	32	12	6	2	11	2	0
Mexico	--	1	0	1	--	--	--
Australia	--	0	0	--	--	--	--
U.S.S.R.	--	--	6	5	--	--	--
New Zealand	--	--	0	--	--	--	--
Indonesia	--	--	--	2	3	--	--
Total***	1,248	989	1,075	709	750	789	784

* -- - zero imports
** 0 - more than zero but less than 0.5 metric tons
*** Total - may not add due to rounding

Source: Japan Marine Products Importers Association 1989-1995.

Table 13. Japan's imports of dried or salted sea urchin roe by value, 1988-1994 (U.S. $1,000).

Country	1988	1989	1990	1991	1992	1993	1994
Korea, Rep.	14,209	8,995	8,003	9,521	11,771	9,152	10,191
Korea, D.P. Rp.	5,152	4,113	5,392	2,273	2,814	2,463	2,947
China	2,134	1,535	1,519	1,810	1,771	1,589	1,211
U.S.A.	172	134	40	8	--*	332	248
Chile	211	--	--	368	330	735	244
Philippines	273	324	382	269	354	371	228
Vietnam	--	--	--	--	--	163	57
Taiwan	194	276	254	204	246	194	39
Canada	208	104	--	--	--	7	24
Iceland	--	--	--	--	--	--	21
Hong Kong	589	169	192	40	288	40	14
Russia, Fed.	--	--	--	--	2	25	11
Mexico	--	16	6	3	--	--	--
Australia	--	2	--	--	--	--	--
U.S.S.R.	--	--	124	98	--	--	--
New Zealand	--	--	2	--	--	--	--
Indonesia	--	--	--	10	18	--	--
Total**	23,141	15,816	15,914	14,603	17,593	15,071	15,235

* -- - zero imports
** Total - may not add due to rounding

Source: Japan Marine Products Importers Association 1989-1995.

Table 14. Japanese tariff structure for sea urchin and sea urchin products, 1995 (percent of cost, insurance, and freight).

HS*	General Tariff	WTO** Tariff	Preferential Tariff
0307.91-430 Fresh or chilled	10.0	9.4	7.0
0307.99-131 Frozen	10.0	9.4	7.0
0307.99-231 Dried, salted, or in brine	10.0	9.4	7.0
0307.91-100 Live	Free	Free	Free
1605.90-220 Prepared or preserved	12.0	12.0	8.0

* HS - Harmonized trade statistical code
** WTO - World Trade Organization

Source: Japan Marine Products Importers Association 1995.

MARKETING

Japan is the world's largest market for sea urchins and sea urchin roe, consuming as much as 70 percent of the world's harvest in 1992. About 79 percent of the domestic consumption of sea urchin roe was supplied from imports in 1994 (Hokkai Suisan Shinbun Sha 1993, Japan Marine Products Importers Association 1995, and Ministry of Agriculture, Forestry and Fisheries 1995).

Most fresh sea urchin roe is sold through auction at the Tokyo Central Wholesale Market in Tsukiji. Fresh sea urchin roe is also sold to central wholesale markets in other cities either through auction or directly without auction. It is also sold directly to supermarket chains, bypassing central wholesale markets (Hokkai Suisan Shinbun Sha 1993).

Live sea urchins are not sold to central wholesale markets. They are primarily shipped to northern Japan, where the roe is extracted and packed for shipment to central wholesale markets in various cities and supermarket chains (Hokkai Suisan Shinbun Sha 1993).

Steamed and frozen, frozen, or salted roe is usually sold directly to processors specializing in preserved sea urchin roe products (Hokkai Suisan Shinbun Sha 1993).

Wholesale prices for fresh roe can vary widely, depending on quality and supply. Highest prices are paid for roe which is bright yellow or orange, firm, unbroken, and packed neatly in traditional wood trays. Roe color is exceedingly important in marketing. Bright yellow roe is considered the highest quality in the Tokyo area, although consumers in the Osaka area often prefer bright orange roe (Hokkai Suisan Shinbun Sha 1993).

Labor costs for packing roe in traditional wood trays are high because of the skill and extra time required. The plastic cup is receiving attention as an economic alternative because of the low costs of packing labor, material, and shipping. Small plastic cups holding about 100 grams of roe are gaining in popularity among supermarket chains due to reasonable prices. Auction prices at the Tokyo Central Wholesale Market in Tsukiji on September 22, 1995, for example, were 500-800 yen ($5.05-8.08) for 100 gram roe in plastic cups, as compared to 1,000-2,500 yen ($10.10-25.25) for 60-80 gram roe in wood tray (Minato Shinbun Sha September 25, 1995). Large-size wood trays containing 280-350 grams of roe are preferred in the Tokyo area and small-size wood trays containing 130-180 grams of roe in the Osaka area (Hokkai Suisan Shinbun Sha 1993).

Table 15 shows annual average wholesale prices at the Tokyo Central Wholesale Market in Tsukiji between 1986 and 1994, in comparison with volume. The prices for domestic and imported roe increased substantially from 1986 to 1994. Since 1987, imported sea urchin roe has replaced domestic roe as the main source of supply at the Tokyo Central Wholesale Market. Table 16 shows

monthly average wholesale prices at the Tokyo Central Wholesale Market in 1994. High prices for imported roe occurred in February and May. The highest prices for Japanese roe occurred in January. These high prices reflect the low availability of both Japanese and imported roe during these months. Average wholesale prices, annual and monthly, fluctuated for domestic and imported roe and the fluctuations were influenced mainly by volume of total supply (domestic and imported roe). As is usually the case, the greater the volume of supply, the lower the price. Major Japanese importers of sea urchins and sea urchin roe are listed in Appendix 2.

Table 15. Annual sales volumes, values, and average wholesale prices of fresh sea urchin roe at Tokyo Central Wholesale Market, 1986-1994.

	Domestic			Imported		
	Volume	Value	Price	Volume	Value	Price
Year	metric tons	¥million	¥/kg	metric tons	¥million	¥/kg
1986	841	6,587	7,835	766	4,270	5,578
1987	880	6,758	7,681	968	5,479	5,660
1988	943	7,061	7,486	1,614	7,201	4,463
1989	845	6,647	7,863	1,894	9,220	4,868
1990	638	6,348	9,952	1,741	10,567	6,056
1991	494	5,075	10,283	2,552	11,964	4,689
1992	405	5,253	12,973	1,731	10,835	6,259
1993	465	5,671	12,209	1,503	10,075	6,704
1994	528	5,571	10,551	1,635	10,200	6,237

Source: Tokyo Metropolitan Government 1987-1995.

Table 16. Monthly sales volumes, values, and average wholesale prices of fresh sea urchin roe at Tokyo Central Wholesale Market, 1994.

	Domestic			Imported		
	Volume	Value	Price	Volume	Value	Price
Month	Metric tons	¥million	¥/kg	metric tons	¥million	¥/kg
Jan.	16.7	263.3	15,761	145.7	968.2	6,646
Feb.	25.5	304.2	11,944	110.1	799.8	7,263
March	36.9	455.6	12,339	130.5	833.7	6,391
April	41.9	529.9	12,661	139.3	815.0	5,849
May	47.9	529.2	11,042	96.2	728.0	7,570
June	88.0	699.9	7,951	91.4	533.3	5,835
July	89.4	784.9	8,778	94.8	508.1	5,360
Aug.	63.7	657.2	10,312	107.8	666.4	6,185
Sept.	36.7	427.1	11,639	136.3	807.8	5,927
Oct.	19.5	188.8	9,690	181.1	1,068.0	5,898
Nov.	19.2	205.0	10,665	145.8	1,019.8	6,995
Dec.	42.6	526.2	12,362	256.5	1,451.5	5,659
Total*	528.0	5,571.2	10,551	1,635.3	10,199.6	6,237

* Total - may not add due to rounding

Source: Tokyo Metropolitan Government 1995.

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Appendix 1. Japan's sea urchin landings, 1956-1993 (metric tons).

Year	Landings	Year	Landings
1956	14,077	1975	22,482
1957	9,225	1976	23,069
1958	12,288	1977	26,898
1959	13,973	1978	25,930
1960	15,871	1979	26,500
1961	15,865	1980	24,158
1962	16,477	1981	23,984
1963	19,302	1982	25,975
1964	20,655	1983	25,254
1965	20,722	1984	23,962
1966	23,219	1985	22,745
1967	23,362	1986	23,072
1968	26,977	1987	22,760
1969	27,528	1988	21,812
1970	27,177	1989	20,414
1971	25,434	1990	19,398
1972	22,686	1991	14,136
1973	26,004	1992	13,889
1974	23,573	1993	13,713

Sources: Ministry of Agriculture, Forestry, and Fisheries 1967-1995.

Appendix 2. Major Japanese sea urchin importers.

COMPANY:	**AIC Inc.**
ADDRESS:	4, 2-chome, Kanda Jimbocho, Chiyoda-ku, Tokyo 101
PHONE:	03-3230-2884
FAX:	03-3238-0574
COMPANY:	**Bennys Ltd.**
ADDRESS:	36-1, Mikitoji, Sakai-shi, Osaka 593
PHONE:	0722-94-9650
FAX:	0722-93-3302
COMPANY:	**Beverly Trading**
ADDRESS:	2-3-202 Kamoike Shinmachi Kagoshima-shi, Kagoshima 890
PHONE:	0992-53-4186
FAX:	NA
COMPANY:	**C.G.C. Japan Co.**
ADDRESS:	1-14, Okubo 2-chome, Shinjuku-ku, Tokyo
PHONE:	03-3203-1132
FAX:	03-3209-8719
COMPANY:	**The Daiei, Inc.**
ADDRESS:	Hamamatsucho Office Center 2-4-1, Shibakoen, Minato-ku, Tokyo 105
PHONE:	03-3433-9154
FAX:	03-3433-9552
COMPANY:	**Dime Co., Ltd.**
ADDRESS:	12-15, Shiba 2-chome, Minato-ku, Tokyo 105
PHONE:	03-3456-4701
FAX:	03-3456-4778
COMPANY:	**Greenwood Trading Corp.**
ADDRESS:	4-13-14-704 Hatchobori, Chuo-ku, Tokyo 104
PHONE:	03-3555-0775
FAX:	03-3555-0795
COMPANY:	**Hadate Suisan Inc.**
ADDRESS:	19-1 Monbei-sawara, Sawara-cho Kayabe-gun, Hokkaido 049-22
PHONE:	01374-8-3355
FAX:	01374-8-3344
COMPANY:	**Hirai Trading Co., Ltd.**
ADDRESS:	White House Bldg. 711 1-20-2 Higashiikebukuro, Toshima-ku, Tokyo 107
PHONE:	03-3980-4061
FAX:	03-3980-5687

Appendix 2. Major Japanese sea urchin importers (continued).

COMPANY:	**Ihara & Co., Ltd.**
ADDRESS:	24, Funabacho 1-chome, Rumoi, Hokkaido 077
PHONE:	01644-3-0001
FAX:	01644-3-4707
COMPANY:	**Inoue Foods Co.**
ADDRESS:	2-4-1 Fujimi, Urayasu-shi, Chiba
PHONE:	0473-52-0035
FAX:	0473-51-0835
COMPANY:	**International Corporation**
ADDRESS:	1-22-20 Shimanouchi, Minami-ku, Morioka, Osaka-shi, Osaka
PHONE:	06-244-1828
FAX:	06-281-1150
COMPANY:	**Iwate Trading Co., Ltd.**
ADDRESS:	2-10-3, Minami-Odori, Morioka, Iwate 020
PHONE:	0196-61-2003
FAX:	NA
COMPANY:	**Jet-Fresh Ltd.**
ADDRESS:	2-7-14 Hamamatsucho, Minato-ku, Tokyo 105
PHONE:	03-3459-9984
FAX:	03-3459-9964
COMPANY:	**Jet Marine Co., Ltd.**
ADDRESS:	4-3-12-701 Tsukiji, Chuo-ku, Tokyo 104
PHONE:	03-3542-3251
FAX:	03-3542-3442
COMPANY:	**Kaido Co., Ltd.**
ADDRESS:	Sanesu Bldg., 3F 3-2, Higashi 1-chome, Kita 30-jo Higashi-ku, Sapporo 065
PHONE:	011-704-8111
FAX:	011-704-8222
COMPANY:	**Kamekura Seafood Co.**
ADDRESS:	26 Hamacho, Abutacho, Hokkaido 049-56
PHONE:	01427-6-4123
FAX:	01427-6-4645
COMPANY:	**Kowa Corporation**
ADDRESS:	Yashima Bldg. 1-1, 3-chome, Shinbashi, Minato-ku, Tokyo
PHONE:	03-3501-8801
FAX:	N/A

Appendix 2. Major Japanese sea urchin importers (continued).

COMPANY:	**Marudai Sato Suisan Corp.**
ADDRESS:	3-20, 6-chome 3-Jo, Nijuyonken, Nishi-ku Sapporo, Hokkaido 063
PHONE:	011-621-6111
FAX:	011-642-9274
COMPANY:	**Maruto Co.**
ADDRESS:	Kakuman Hayashi Bldg. Nishi 19, Kita 8, Chuo-ku, Sapporo, Hokkaido 060
PHONE:	011-644-9201
FAX:	011-644-9202
COMPANY:	**Matsuoka Co., Ltd, Tokyo Branch**
ADDRESS:	Kunisue Bldg. 2-1-2 Tsukiji, Chuo-ku, Tokyo 104
PHONE:	03-3541-2200
FAX:	03-5550-2068
COMPANY:	**MCQ Trading Inc.**
ADDRESS:	2-10-9-202 Fukasawa, Setagaya-ku, Tokyo 158
PHONE:	03-3705-4833
FAX:	03-3705-0890
COMPANY:	**Miyata Trading Co.**
ADDRESS:	Koishikawa Bldg. 5-10, 4-chome, Tsukiji, Chuo-ku, Tokyo
PHONE:	03-3545-8511
FAX:	NA
COMPANY:	**Nakajima Suisan Co., Ltd.**
ADDRESS:	4-6-5 Tsukiji, Chuo-ku, Tokyo 104
PHONE:	03-3543-5721
FAX:	03-3543-2523
COMPANY:	**New York Project Co.**
ADDRESS:	North-16 East-6 East Sapporo
PHONE:	011-711-2749
FAX:	011-711-1729
COMPANY:	**Nichia Koeki Co., Ltd.**
ADDRESS:	No. 6 Kakiuchi Bldg. 18-4, 1-chome Higashi-Gotanda, Shinagawa-ku, Tokyo
PHONE:	03-3447-3661
FAX:	03-3447-1886
COMPANY:	**Nichibo Japan Trading Co., Ltd.**
ADDRESS:	P.O. Box 55, Isle, Mie Pref. 516
PHONE:	0596-22-3011
FAX:	0596-22-3956

Appendix 2. Major Japanese sea urchin importers (continued).

COMPANY:	**Nisshin International Corp.**
ADDRESS:	Tsukiji Mikasa Bldg. 2-10-4 Tsukiji, Chuo-ku, Tokyo 104
PHONE:	03-3542-3628
FAX:	03-3545-9525
COMPANY:	**Nozaki & Co., Ltd.**
ADDRESS:	2-2-6 Nihonbashi-bakurocho, Chuo-ku, Tokyo 103-91
PHONE:	03-5641-4351
FAX:	03-5641-4397
COMPANY:	**Ocean Boeki Co.**
ADDRESS:	Kyoto Toshiba Bldg. 2F 25 Hiramachi, Saiin, Ukyo-ku, Kyoto 615
PHONE:	075-314-8720
FAX:	075-313-6150
COMPANY:	**Ogawa & Co., Ltd.**
ADDRESS:	Tokyo Liaison Office c/o Seibu Kohku Kanda Office 1-3-8 Iwamotocho, Chiyoda-ku, Tokyo 101
PHONE:	03-3865-0030
FAX:	03-3851-5158
COMPANY:	**Oh-ami Inc.**
ADDRESS:	3-12-2 Motoazabu, Minato-ku, Tokyo 106
PHONE:	03-3478-2661
FAX:	03-3478-2776
COMPANY:	**Pegasus Foods (Japan) Inc.**
ADDRESS:	Tokyo Suisan Kaikan 1F 5-9 Toyomi-cho, Chuo-ku, Tokyo 104
PHONE:	03-532-1031
FAX:	03-532-1479
COMPANY:	**Sato Suisan Co., Ltd.**
ADDRESS:	48-1 Miyagasaki, Onagawa-cho Oshika-gun, Miyagi Pref. 986-22
PHONE:	022-553-4155
FAX:	022-253-4441
COMPANY:	**Seafood Japan, Inc.**
ADDRESS:	Albelgo Ueno 405 7-3-9 Ueno, Taito-ku, Tokyo
PHONE:	03-3843-1560
FAX:	03-3843-5487
COMPANY:	**Shimakyu Lux Co., Ltd.**
ADDRESS:	Uoichi-Nissei Bldg. 13-5, Noda 2-chome, Fukushima-ku, Osaka 553
PHONE:	06-465-7201
FAX:	06-465-7221

Appendix 2. Major Japanese sea urchin importers (continued).

COMPANY:	**Shin Nihon Global Inc.**
ADDRESS:	3F SK Bldg., 13-19, 1-come Shintomi Chuo-ku, Tokyo 104
PHONE:	03-3555-3600
FAX:	03-3555-3601
COMPANY:	**Suzuki Shoten Co., Ltd.**
ADDRESS:	2028-10 Fujie, Akasshi-shi, Hyogo-ken 673
PHONE:	078-921-3117
FAX:	078-921-3122
COMPANY:	**Togen Ltd.**
ADDRESS:	Rm. 2312, Kasumigaseki Bldg. 3-2-5 Kasumigaseki, Chiyoda-ku, Tokyo 100
PHONE:	03-3580-5711
FAX:	03-3581-1802
COMPANY:	**Tokyo Sento Co., Ltd.**
ADDRESS:	4-3-1 Oroshimachi, Wakabayashi-ku Sendai-shi, Miyagi Pref.
PHONE:	022-237-1331
FAX:	022-232-8308
COMPANY:	**Tominaga Trading Co.**
ADDRESS:	1-15-15 Awaza, Nishi-ku, Osaka 550
PHONE:	06-531-4700
FAX:	06-541-0676
COMPANY:	**Torin Trading Co.**
ADDRESS:	21-75, Junibayashi, Kanya, Mutsu, Aomori 035
PHONE:	0175-22-6336
FAX:	0175-22-6337
COMPANY:	**Transpac Fisheries, Ltd.**
ADDRESS:	1-1-2 Azabudai, Minato-ku, Tokyo 106
PHONE:	03-5570-2525
FAX:	03-5570-2562
COMPANY:	**T.S. International Ltd.**
ADDRESS:	2-2-12-501 Mukaiyama, Taihaku-ku, Sendai 982
PHONE:	022-222-1851
FAX:	022-221-1047

Sources: Hokkai Suisan Shinbun Sha 1993.
Japan Marine Products Importers Association 1995.
U.S. Embassy, Commercial Section, Tokyo, Japan 1995.